

1 WHAT IS CLAIMED IS:

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3 1. An amplifier comprising at least one output and first and second supply rails,  
4 the amplifier further comprising offset cancellation logic which is operable in a calibration  
5 mode to generate a first offset cancellation signal when the at least one output is coupled to a  
6 first voltage corresponding to the first supply rail, and a second offset cancellation signal  
7 when the at least one output is coupled to a second voltage corresponding to the second  
8 supply rail, the offset cancellation logic further being operable to facilitate at least partial  
9 cancellation of an offset voltage associated with the at least one output during a normal  
10 operation mode using a third offset cancellation signal which substantially corresponds to an  
11 average of the first and second offset cancellation signals.

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13 2. The amplifier of claim 1 wherein the amplifier comprise one of a switching  
14 amplifier topology and a linear amplifier topology.

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16 3. The amplifier of claim 1 wherein the switching amplifier topology employs  
17 continuous-time feedback from the at least one output.

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19 4. The amplifier of claim 1 wherein the amplifier comprises one of a single-  
20 ended amplifier and a differential amplifier.

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22 5. The amplifier of claim 1 wherein the amplifier comprises multiple channels,  
23 each of the channels comprising an instance of the offset cancellation logic.

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1           6.       The amplifier of claim 1 wherein the offset cancellation logic is operable to  
2 generate the third offset cancellation signal during the calibration mode.

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4           7.       The amplifier of claim 1 wherein the amplifier comprises a switching  
5 differential amplifier, and the at least one output comprises first and second outputs which  
6 together form a differential output.

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8           8.       The amplifier of claim 7 wherein the offset cancellation logic is operable to  
9 generate the first offset cancellation signal when the first and second outputs are coupled to  
10 the first voltage, and the second offset cancellation signal when the first and second outputs  
11 are coupled to the second voltage.

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13          9.       The amplifier of claim 1 wherein the offset cancellation logic comprises a  
14 digital-to-analog converter (DAC), a first up/down counter, a second up/down counter, and  
15 calibration control logic, the calibration control logic being operable to configure the  
16 amplifier for the calibration and normal operation modes, the calibration control logic further  
17 being operable during the calibration mode to control the first and second counters and the  
18 DAC via one of the counters to generate the first and second offset cancellation signals, the  
19 DAC being operable during normal operation mode to generate the third offset cancellation  
20 signal.

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22          10.      The amplifier of claim 1 wherein the amplifier is optimized for operation in a  
23 frequency range.

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1           11.     The amplifier of claim 10 wherein the frequency range comprises the audio  
2 frequency range.

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4           12.     The amplifier of claim 1 further comprising a processor stage and a power  
5 output stage, the offset cancellation logic being part of the processor stage.

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7           13.     At least one computer-readable medium having data structures stored therein  
8 representative of the processor stage of claim 12.

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10          14.     The at least one computer-readable medium of claim 13 wherein the data  
11 structures comprise a simulatable representation of the processor stage.

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13          15.     The at least one computer-readable medium of claim 14 wherein the  
14 simulatable representation comprises a netlist.

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16          16.     The at least one computer-readable medium of claim 13 wherein the data  
17 structures comprise a code description of the processor stage.

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19          17.     The at least one computer-readable medium of claim 16 wherein the code  
20 description corresponds to a hardware description language.

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22          18.     A set of semiconductor processing masks representative of at least a portion  
23 of the processor stage of claim 12.

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25          19.     An integrated circuit comprising the offset cancellation logic of claim 1.

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2           20.     An electronic system comprising the integrated circuit of claim 19.

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4           21.     A switching amplifier comprising  
5           a power output stage comprising first and second outputs forming a differential  
6           output, and first and second supply rails; and  
7           a processor stage operable to receive an input signal and generate a processed  
8           differential signal for amplification by the power output stage, the processor stage further  
9           comprising offset cancellation logic which is operable in a calibration mode to generate a  
10          first offset cancellation signal when the first and second outputs are coupled to a first voltage  
11          corresponding to the first supply rail, and a second offset cancellation signal when the first  
12          and second outputs are coupled to a second voltage corresponding to the second supply rail,  
13          the offset cancellation logic further being operable to facilitate at least partial cancellation of  
14          an offset voltage associated with the different output during a normal operation mode using a  
15          third offset cancellation signal which substantially corresponds to an average of the first and  
16          second offset cancellation signals.

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18          22.     A method for facilitating at least partial cancellation of an offset voltage  
19          associated with first and second outputs of an amplifier, the amplifier having first and second  
20          supply rails associated therewith, the method comprising:  
21                  configuring the amplifier for a calibration mode, and in the calibration mode,  
22                  setting the first and second outputs to a first voltage associated with  
23                  the first supply rail;

1           while the first and second outputs are at the first voltage, determining a  
2           first offset cancellation signal by which the offset voltage is substantially  
3           canceled;

4           setting the first and second outputs to a second voltage associated with  
5           the second supply rail; and

6           while the first and second outputs are at the second voltage,  
7           determining a second offset cancellation signal by which the offset voltage is  
8           substantially canceled; and

9           configuring the amplifier for a normal operation mode, and in the normal operation  
10          mode at least partially canceling the output offset voltage using a third offset cancellation  
11          signal which substantially corresponds to an average of the first and second offset  
12          cancellation signals.

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